TEXAS WATER COMMISSION

December 21, 1987

Mr. Jim Pendergast, P.E.
U.S. Environmental Protection Agency
Region VI
1445 Ross Avenue
Dallas, Texas 75202-2733

1012339

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Re: North Cavalcade, Review of Remedial Alternatives Screening Report

Dear Mr. Pendergast:

We have conducted a review of the draft "Remedial Alternatives Screening Memorandum Report for North Cavalcade Street Site Houston, Texas Site No. 141". Attached are our comments.

In conjunction with our review of this draft document, we requested the Texas Department of Health, the Texas Railroad Commission and the Texas Air Control Board to identify state regulations under their jurisdiction which may be applicable or relevant and appropriate for remediation action proposals at this site. Enclosed are the responses we have received from the Railroad Commission and the Health Department. The Air Control Board has not yet responded to our request. We will forward their response as soon as it is available.

The State water quality regulations identified by your consultant Camp, Dresser and McKee (CDM) as applicable or relevant and appropriate requirements (ARARs) appear to be appropriately identified. In addition to the identified proposed State Water Quality Regulations, the current Surface Water Quality Standards, promulgated as Title 31 Texas Administrative Code Chapter 333 contains a policy statement and an antidegradation statement which may be applicable to a selected remedial action. These regulations are stated in narrative form and allows the TWC to establish specific criteria on a case-by-case basis. In most cases, the TWC utilizes the EPA Water Quality (Goldbook) Guidelines. Attached is a copy of the State Surface Water Quality Standards (pages 1 through 17).

In accordance with the "Interim Guidance on State Participation in Pre-Remedial and Remedial Response" the TWC desires to be

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consulted with, if EPA intends to waive State ARARs, under section 121 (d)(4) of CERCLA. Under this policy, we also will need to be notified during the design of the selected remedy to determine whether there are additional State ARARs which are applicable to the site.

As you know, many of the state regulations equate to the Federal regulations. We have not identified those state regulations which are equivalent. Therefore, should there be an occasion when the EPA desired to waive a federal ARAR which had an equivalent state regulation, the state regulation would become more stringent. As discussed above, you would need to notify us and solicit our comments at that time.

Sincerely,

Joe H. Brown
Remedial Investigation Unit
Superfund Section
Hazardous and Solid Waste Division

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Attachment

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...ovra, December 20, 1984

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Part of
Joe Brown
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Surface Water Quality Standards
§§333.11-333.21

The following sections are adopted under the authority of the Texas Water Code, Section 26.023.

§333.11. Policy Statement. It is the policy of this state, as set forth in the Texas Water Code and this chapter, to maintain the quality of water in the state consistent with public health and enjoyment, propagation and protection of terrestrial and aquatic life, operation of existing industries, and economic development of the state; to encourage and promote development and use of regional and areawide wastewater collection, treatment, and disposal systems to serve the wastewater disposal needs of the citizens of the state; and to require the use of all reasonable methods to implement this policy.

005387

§333.12. Antidegradation Statement. In implementing the legislative policy expressed in Texas Water Code §26.003, it is the policy of the Texas Department of Water Resources (hereinafter, the "department") that:

(1) The waters in the state whose existing quality is better than applicable water quality standards as of the effective date of this rule will be maintained at their higher quality, and no waste discharges may be made which will result in a lowering of quality unless and until it has been demonstrated to the department that lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. Additionally, no degradation shall be allowed in higher quality waters within or adjacent to national parks and wildlife refuges, wild and scenic rivers designated by law, or other waters of exceptional recreational or ecological significance designated by law if the department determines that such degradation would significantly impair water quality necessary to protect and maintain the established purpose of the area.

(2) Existing instream water uses and associated water quality levels or requirements established by general and numerical criteria in these standards will be maintained and protected consistent with the provisions of the Texas Water Code, Chapter 11, and in accordance with §101(g) of the Clean Water Act (33 USC 1251). Designated uses will be reviewed when appropriate, and necessary changes will be proposed and justified in accordance with 40 CFR Part 131.20 and 131.21.

(3) The department will not authorize or approve any waste discharge that will result in the quality of any water

being lowered below water quality standards without complying with federal and state laws applicable to water quality standards amendment.

(4) Anyone discharging wastewater which would constitute a new source of pollution or an increased source of pollution from any industrial, public, or private project or development will be required to provide a level of wastewater treatment consistent with the provisions of the Texas Water Code and the Clean Water Act (33 USC 1251 et seq.). As necessary, cost-effective and reasonable best management practices (BMP) established through the Texas water quality management (WQM) program shall be achieved for nonpoint sources of pollution.

(5) Application of antidegradation provisions shall not preclude the department from establishing modified thermal discharge limitations consistent with §316(a) of the Clean Water Act (33 USC 1326).

(6) Antidegradation policy implementation is partially achieved through specific reviews and approvals identified in paragraphs (3), (4), and (5) of this subsection. Additional implementation activities are accomplished according to the rules of the Texas Water Development Board (hereinafter, the "board"), as set out in the Texas Water Code and the Texas Administrative Code, and procedures established through the state water quality management (WQM) program and the continuing planning process (CPP).

§333.13. Classification of Surface Waters. The surface waters of the state are divided into four categories:

(1) River basin waters. Surface inland waters comprising the major rivers, their tributaries, including listed impounded waters, and the tidal portion of rivers to the extent that they are confined in channels.

(2) Coastal basin waters. Surface inland waters, including listed impounded waters but exclusive of paragraph (1) of this subsection, discharging, flowing, or otherwise communicating with bays or the gulf, including the tidal portion of streams to the extent that they are confined in channels.

(3) Bay waters. All tidal waters, exclusive of those included in river basin waters, coastal basin waters, and gulf waters.

(4) Gulf waters. Waters which are not included in or do not form a part of any bay or estuary but which are a part of the open waters of the Gulf of Mexico to the limit of the state's jurisdiction.

§333.14. Description of Standards.

(a) The policy, antidegradation, and application statements in §333.11 of this title (relating to Policy Statement), §333.12 of this title (relating to Antidegradation Statement), and §333.16 of this title (relating to Application of Standards), respectively, are integral parts of the standards, and the standards shall be interpreted in accordance with these statements.

(b) The standards consist of three parts:

(1) General criteria in §333.17 of this title (relating to General Criteria) that are applicable to all surface waters of the state, except as provided otherwise in §333.16 of this title (relating to Application of Standards) and §333.20 of this title (relating to Determination of Standards Attainment).

(2) Numerical criteria in §333.18 of this title (relating to Numerical Criteria) and in §333.19 of this title (relating to Water Uses) that are applicable to specific surface waters listed in Appendix A of §333.21 of this title (relating to Appendices A through C) of the standards.

(3) Water uses in §333.19 of this title (relating to Water Uses) that are deemed desirable for specific surface waters listed in Appendix A of §333.21 of this title (relating to Appendices A through C) of the standards. The specification of desirable uses reflects the department's objective to attain and protect a quality of water appropriate to maintain the water uses designated for a stream segment.

(c) Desirable water uses and associated numerical criteria are set out in §333.18 of this title (relating to Numerical Criteria) and §333.19 of this title (relating to Water Uses). Appendix A of §333.21 of this title (relating to Appendices A through C) lists surface waters that have been specifically designated for desired water uses.

(d) Modification of standards.

(1) The board reserves the right to amend these standards following the completion of special studies.

(2) Any errors in water quality standards resulting from clerical errors or errors in data may be corrected by the board through amendment of the affected standards. Water quality standards not affected by such clerical errors or errors in data remain valid until changed by the board.

§333.15. Definitions and Abbreviations.

(a) Definitions. The following words and terms, when used in this chapter, shall have the following meanings, unless the context clearly indicates otherwise:

(1) "Ambient" - the natural conditions that would be expected to occur in waters unaffected or not influenced by the activities of man.

(2) "Best management practice" - a schedule of activities, a management practice or combination of practices, prohibitions of practices, or maintenance procedures determined to be the most practicable means of preventing or reducing, to a level compatible with water quality goals, the amount of pollution generated by nonpoint sources.

(3) "Bioaccumulative toxic" - a toxic substance which has a tendency to accumulate in organisms.

(4) "Board" - the Texas Water Development Board.

(5) "Contact recreation" - recreational activities involving a significant risk of ingestion of water, including wading by children, swimming, water skiing, diving, and surfing.

(6) "Continuing planning process (CPP)" - a document that describes the state's planning and management process and procedures for making water quality decisions. The CPP is required by §303(e) of the Clean Water Act (33 USC 1313).

(7) "Criteria" - concentrations of water constituents or characteristics which, if not exceeded, are expected to support and protect desired uses.

(8) "Department" - the Texas Department of Water Resources.

(9) "Dissolved solids" - the amount of material (inorganic salts and small amounts of organic material) dissolved in water and commonly expressed as a concentration in terms of milligrams per liter. The term is equivalent to the term filtrable residue, as used in the fifteenth edition of Standard Methods for the Examination of Water and Wastewater.

(10) "Effluent" - wastewater discharged from any point source prior to entering a water body.

(11) "Epilimnion" - the upper layer of a lake (including impoundments, ponds, and reservoirs) lying above the metalimnion.

(12) "Fecal coliform" - that portion of the coliform bacteria group which is present in the intestinal tracts and feces of warm-blooded animals.

(13) "LC_{50}" - the concentration of a toxicant that is lethal (fatal) to fifty (50) percent of the organisms tested in a specified time period.

(14) "Mixing zone" - the area contiguous to a discharge where initial dilution takes place and which may not meet numerical criteria applicable to the receiving water.

(15) "Noncontact recreation" - recreational pursuits not involving a significant risk of water ingestion, including fishing, commercial and recreational boating, and limited body contact incidental to shoreline activity.

005390

(16) "Nonpersistent toxic" - a toxic substance that readily degrades in the aquatic environment, exhibits a half-life of less than ninety-six (96) hours, and does not have a tendency to accumulate in organisms.

(17) "Persistent toxic" - a toxic substance that is not readily degraded, exhibits a half-life of ninety-six (96) hours or more, is bioaccumulative, or acts additively, synergistically, or antagonistically with other pollutants.

(18) "Salinity" - the total dissolved solids in water after all carbonates have been converted to oxides, all bromide and iodide have been replaced by chloride, and all organic matter has been oxidized. For most purposes, salinity is considered equivalent to total dissolved salt content.

(19) "Settleable solids" - material which will settle out of a water sample in a specified period of time. Settleable solids are measured as either volume or weight and are calculated by subtracting nonsettleable matter from total suspended matter.

(20) "Seven-day, two-year low flow" - the lowest flow that has been known to occur for seven consecutive days during a two-year period as statistically determined from historical data. It is the flow used for determining the allowable discharge load to a stream.

(21) "Shellfish water" - waters producing edible species of clams, oysters, or mussels.

(22) "Standards" - the designation of water bodies for desirable uses and the general and numerical criteria deemed necessary to protect those uses.

(23) "Suspended solids" - total suspended matter in water which is equivalent to nonfiltrable residue, as defined in the fifteenth edition of Standard Methods for the Examination of Water and Wastewater.

(24) "Water quality management (WQM) program" - the department's overall program for attaining and maintaining water quality consistent with state standards, as authorized under the Texas Water Code, the Texas Administrative Code, and §§106, 205(j), 208, 303(e), and 314 of the Clean Water Act (33 USC 1251 et seq.).

(b) Abbreviations.

(1) "AP" - aquifer protection.
(2) "AS" - agricultural water supply.
(3) "CFR" - Code of Federal Regulations.
(4) "CR" - contact recreation.
(5) "CPP" - continuing planning process.
(6) "DO" - dissolved oxygen.
(7) "E" - exceptional quality aquatic habitat.
(8) "°F" - degree(s) Fahrenheit.
(9) "ft^3/s" - cubic feet per second.
(10) "H" - high quality aquatic habitat.

005391

(11) "I" - intermediate quality aquatic habitat.
(12) "IS" - industrial water supply.
(13) "L" - limited quality aquatic habitat.
(14) "mg/l" - milligrams per liter.
(15) "ml" - milliliter.
(16) "N" - navigation.
(17) "NCR" - noncontact recreation.
(18) "NPDES" - National Pollutant Discharge Elimination System, as set out in §402 of the Clean Water Act (33 USC 1342).
(19) "PS" - public water supply.
(20) "7Q2" - seven-day, two-year low flow.
(21) "S" - shellfish waters.
(22) "TDS" - total dissolved solids.
(23) "USC" - United States Code.
(24) "USEPA" - U.S. Environmental Protection Agency.
(25) "USGS" - U.S. Geological Survey.
(26) "WQM" - water quality management.

005392

§333.16. Application of Standards.

(a) General Criteria. General criteria set forth in §333.17 of this title (relating to General Criteria) apply to all surface waters of the state at all times and specifically apply to substances attributed to waste discharges or the activities of man. General criteria do not apply to those instances in which surface water, as a result of natural phenomena, occasionally exhibit characteristics beyond the limits established by §333.17 of this title (relating to General Criteria). Specific exemptions stated in this section or in a classified segment water quality standard supersede general criteria.

(b) Numerical Criteria. Numerical criteria may apply to one or more water uses and are set forth in §333.18 of this title (relating to Numerical Criteria) and in §333.19 of this title (relating to Water Uses). The criteria apply to segments listed in Appendix A of §333.21 of this title (relating to Appendices A through C) and specifically apply to substances attributed to waste discharges or the activities of man. Numerical criteria do not apply to surface waters which, as a result of natural phenomena, occasionally exhibit characteristics beyond the limits established by §333.18 of this title (relating to Numerical Criteria) and §333.19 of this title (relating to Water Uses).

(c) Flow Criteria.

(1) Flow criteria in Appendix B of §333.21 of this title (relating to Appendices A through C) are solely for the purpose of defining the flow conditions under which water quality standards apply to a given water body. Low-flow criteria listed in Appendix B of §333.21 of this title (relating to Appendices A

through C) are not for the purpose of regulating flows in water bodies in any manner or requiring that minimum flows be maintained in classified segments.

(2) Flow criteria defined in this section and listed in Appendix B of §333.21 of this title (relating to Appendices A through C) apply only to river basin and coastal basin waters. They do not apply to bay or gulf waters or reservoirs or estuaries.

(3) Seven-day, two-year low flows (7Q2) in Appendix B of §333.21 of this title (relating to Appendices A through C) were calculated from historic U.S. Geological Survey (USGS) daily streamflow records where available. Where a USGS flow station was not located at a department monitoring station, the low-flow condition was interpolated/extrapolated from the nearest comparable USGS stations. The low flow was set at one-tenth (0.1) of one (1) cubic foot per second (ft^3/s) when the calculated 7Q2 was equal to or less than one-tenth (0.1) of one (1) ft^3/s.

(4) Flow values will be periodically recomputed to reflect alterations in the hydrologic characteristics of a segment, including reservoir construction, climatological trends, and other phenomena.

(d) General and numerical criteria.

(1) Inorganic chemical parameters. Water quality criteria for chloride, sulfate, and total dissolved solids represent average annual values from a single sampling point or multiple sampling points within a segment and shall apply when flow equals or exceeds the specified flow criterion.

(2) Dissolved oxygen and pH. Dissolved oxygen, which represents an absolute minimum value, and pH criteria shall apply throughout the segment at all times that the daily flow equals or exceeds the specified flow criterion.

(3) Temperature. Temperature criteria shall apply throughout the segment at all times that the daily flow equals or exceeds the specified flow criterion.

(4) Other parameters and general criteria. General criteria and numerical criteria not specifically discussed in this subsection shall apply throughout the segment at all times regardless of flow unless exempted under subsection (h) of this section.

(e) Mixing zones.

(1) Departmental determination of mixing zones shall be on a case-by-case basis, taking into account other nearby mixing zones. Applicable limits may include, but are not limited to, linear distances from the point of discharge, surface area involvement, and volume of receiving water. Consideration will be given to guidance contained in the USEPA's Water Quality

Standards Handbook (1983) when determining mixing zones.

(2) Where a mixing zone is defined in a valid department or National Pollutant Discharge Elimination System (NPDES) waste discharge permit, the defined zone shall apply.

(3) A reasonable mixing zone shall be allowed when a specific mixing zone has not been defined in a valid permit. Mixing zones should normally be limited to no more than twenty-five (25) percent of the cross-sectional area or volume of flow of a water body; seventy-five (75) percent of the cross-sectional area or volume of flow should be maintained as a zone of passage unless otherwise specified in a discharge permit. The mixing zone shall not preclude passage of free-swimming or drifting aquatic organisms to the extent that aquatic life use is significantly affected.

(4) Toxic material concentrations within the mixing zone shall not exceed the ninety-six (96) hour LC_{50} for representative sensitive, indigenous aquatic organisms.

(f) Temperature.

(1) Temperature criteria apply to classified freshwater streams, freshwater impoundments, and tidal river reaches and bay and gulf waters.

(2) Temperature differentials shall not apply where the temperature increase is due to the discharge of treated domestic (sanitary) sewage effluent.

(3) Temperature for classified segments shall not exceed the maximum criteria listed in Appendix A of §333.21 of this title (relating to Appendices A through C).

(g) Toxic materials. Toxic material concentrations represent levels that should not be exceeded at any time or place after mixing.

(h) Exceptions.

(1) Water quality standards do not apply to treated effluents.

(2) Numerical criteria established in §333.18 of this title (relating to Numerical Criteria) and §333.19 of this title (relating to Water Uses) and set forth in Appendix A of §333.21 of this title (relating to Appendices A through C) do not apply to:

(A) Mixing zones defined in a valid department or NPDES waste discharge permit or according to subsection (e)(3) of this section,

(B) Dead-end barge or ship channels constructed for navigation purposes unless specifically designated in Appendix A of §333.21 of this title (relating to Appendices A through C), or

(C) Intermittent or effluent-dominated streams.

005394

§333.17. General Criteria.

(a) Aesthetic parameters.

(1) Concentrations of taste and odor producing substances shall not interfere with the production of potable water by reasonable water treatment methods, impart unpalatable flavor to food fish including shellfish, result in offensive odors arising from the waters, or otherwise interfere with the reasonable use of the waters of the state.

(2) Surface waters shall be essentially free of floating debris and suspended solids that are conducive to producing:

(A) Adverse responses in aquatic organisms, or

(B) Putrescible sludge deposits or sediment layers which adversely affect benthic biota or any lawful uses.

(3) Surface waters shall be essentially free of settleable solids conducive to changes in flow characteristics of stream channels or the untimely filling of reservoirs, lakes, and bays.

(4) Surface waters shall be maintained in an aesthetically attractive condition.

(5) Turbidity and color shall not be substantially changed from ambient conditions due to waste discharges to the extent that use is adversely affected.

(6) There shall be no foaming or frothing of a persistent nature.

(7) Surface waters shall be maintained so that oil, grease, or related residue will not produce a visible film of oil or globules of grease on the surface or coat the banks or bottoms of the watercourse.

(b) Radiological parameters. Radioactive materials shall not be discharged in excess of the amount regulated by the Texas Regulations for Control of Radiation (Title 25, TAC §289.1 et seq.).

(c) Toxic parameters. Surface waters will not be toxic to man or terrestrial or aquatic life.

(d) Nutrient parameters. Generally applicable criteria for nitrogen, phosphorus, carbon, and trace elements cannot be established because sufficient information on nutrient cycling in Texas waters and cause-effect relationships between nutrient concentrations and water quality is not presently available. Case-by-case nutrient criteria, where appropriate, will be established as information becomes available and after public participation and proper hearing.

(e) Temperature. Consistent with the §333.11 of this title (relating to Policy Statement) and in accordance with state water rights permits, temperature in industrial cooling lake impoundments and all other surface waters of the state shall be maintained so as to not interfere with the

reasonable use of such waters. Numerical temperature criteria have not been specifically established for industrial cooling lake impoundments, which in most areas of the state contribute to water conservation and water quality objectives.

(f) Salinity.

(1) Estuarine salinity criteria have not been established, despite the recognition that proper salinity gradient maintenance is important for the continuation of balanced and desirable populations of estuarine dependent marine life, because weather is the dominant factor influencing salinity gradients.

(2) Absence of numerical salinity criteria shall not preclude evaluations and regulatory actions based on estuarine salinity, and careful consideration will be given to all activities which may detrimentally affect salinity gradients in estuarine waters.

(g) Dissolved oxygen. A dissolved oxygen (DO) goal of not less than three (3.0) mg/l shall apply to all water bodies not specifically listed in Appendix A of §333.21 of this title (relating to Appendices A through C). In unclassified waters where a DO value of less than three (3.0) mg/l is justifiable, which will most often apply to intermittent and effluent-dominated streams and dead-end barge and ship canals, a DO level of two (2.0) mg/l shall be recognized as a minimum water quality objective. Nothing in this subsection shall be construed to prevent the application of more stringent dissolved oxygen criteria for perennial and non-effluent dominated water bodies if the department determines that such action is necessary to protect existing water quality or desirable water uses.

(h) Bacteria. A fecal coliform goal of not more than two-thousand (2,000) colonies per one-hundred (100) ml shall apply to all water bodies not specifically listed in Appendix A of §333.21 of this title (relating to Appendices A through C.)

§333.18. Numerical Criteria.

(a) Numerical criteria specified in this section are for one or more water uses. Numerical criteria associated with individual water uses are enumerated in §333.19 of this title (relating to Water Uses).

(b) Chemical parameters. Criteria for chloride, sulfate, and total dissolved solids concentrations applicable to classified segments, except as qualified in §333.16 of this title (relating to Application of Standards), are listed in Appendix A of §333.21 of this title (relating to Appendices A through C).

(c) Dissolved oxygen. Minimum dissolved oxygen criteria for classified segments, except as qualified in §333.16 of this title (relating to Application of Standards), are listed in

Appendix A of §333.21 of this title (relating to Appendices A through C).

(d) pH. Minimum and maximum pH range criteria for classified segments, except as qualified in §333.16 of this title (relating to Application of Standards), are listed in Appendix A of §333.21 of this title (relating to Appendices A through C).

(e) Temperature.

(1) Temperature criteria consist of a maximum temperature value and a maximum temperature differential attributable to heated effluents. Except as qualified in §333.16 of this title (relating to Application of Standards), temperature shall not exceed the maximum criteria in Table 1 in paragraph (2) of this subsection.

(2) Table 1. Temperature Criteria for Surface Waters.

Surface Water Bodies	Temperature Criteria	
	Maximum Temperature	Maximum Temperature Differential (rise over ambient)
Freshwater Streams	See Appendix A of §333.21 of this title (relating to Appendices A through C) for classified segment value	5°F
Freshwater Impoundments	See Appendix A of §333.21 of this title (relating to Appendices A through C) for classified segment value	3°F
Tidal River Reaches, Bay and Gulf Waters		
Fall, Winter, Spring,	95°F	4°F
Summer (June, July, August)	95°F	1.5°F

(f) Bacteriological criteria.

(1) Bacteriological criteria are for fecal coliform organisms and consist of a measure of general quality and a limit on variations from general quality.

(2) Criteria for recreational uses are established in §333.19 of this title (relating to Water Uses) and specifically listed for classified segments in Appendix A of §333.21 of this title (relating to Appendices A through C).

(3) Criteria for shellfish waters are established in §333.19 of this title (relating to Water Uses) and specifically listed for classified segments in Appendix A of §333.21 of this title (relating to Appendices A through C).

§333.19. Water Uses.

(a) The following list represents uses and supporting criteria deemed desirable by the department. The order of the following list does not denote priority of use.

(b) Recreation. Recreational use consists of two subcategories, contact recreation waters and noncontact recreation waters.

(1) Contact recreation waters.

(A) Fecal coliform content shall not exceed two-hundred (200) colonies per one-hundred (100) ml as a geometric mean based on a representative sampling of not less than five (5) samples collected over not more than thirty (30) days.

(B) Fecal coliform content shall not equal or exceed four-hundred (400) colonies per one-hundred (100) ml in more than ten (10) percent of all samples, but based on at least five (5) samples, taken during any thirty (30) day period. If ten (10) or fewer samples collected within a thirty (30) day period are analyzed, no more than one (1) sample shall exceed four-hundred (400) colonies per one-hundred (100) ml.

(2) Noncontact recreation waters.

(A) Fecal coliform content shall not exceed two-thousand (2,000) colonies per one-hundred (100) ml as a geometric mean based on a representative sampling of not less than five (5) samples collected over not more than thirty (30) days.

(B) Fecal coliform content shall not equal or exceed four-hundred (400) colonies per one-hundred (100) ml in more than ten (10) percent of all samples, but based on at least five (5) samples, taken during any thirty (30) day period. If ten (10) or fewer samples collected within a thirty (30) day period are analyzed, no more than one (1) sample shall exceed four-thousand (4,000) colonies per one-hundred (100) ml.

(c) Domestic water supply.

(1) Use categories. Domestic water supply consists of two use subcategories, public water supply and aquifer protection.

(A) Public water supply. Segments designated for public water supply are those known to be used or exhibit characteristics that would allow them to be used as the supply source for community and

005398

005398

non-community water supply systems, as defined by regulations promulgated pursuant to the Safe Drinking Water Act (42 USC 300f et seq.).

(B) Aquifer protection. Segments designated for aquifer protection are capable of recharging the Edwards Aquifer. In accordance with board rules, the principal purpose of this use designation is to protect the quality of water infiltrating into and recharging the aquifer.

(2) Use criteria. The following use criteria apply to both domestic water supply use subcategories.

(A) Radioactivity associated with dissolved minerals in the freshwater portions of river basin and coastal basin waters should not exceed levels established by regulations promulgated pursuant to the Safe Drinking Water Act unless the conditions are of natural origin.

(B) Surface waters utilized for domestic water supply shall not exceed toxic material concentrations that prevent them from being treated to meet regulatory requirements promulgated pursuant to the Safe Drinking Water Act.

(C) Chemical and microbiological quality of surface waters used for domestic water supply should conform to regulatory requirements promulgated pursuant to the Safe Drinking Water Act. Surface waters that do not meet drinking water standards but that are the only supply source may be designated for public water supply where chemical and microbiological constituents do not pose a potential health hazard.

(d) Aquatic life.

(1) Aquatic life subcategories. The establishment of numerical criteria for aquatic life is highly dependent on desired use, sensitivities of usual aquatic communities, and local physical and chemical characteristics. Five subcategories of use are established. They include limited quality, intermediate quality, high quality, and exceptional quality aquatic habitat and shellfish waters. Aquatic life subcategories designated for segments listed in Appendix A of §333.21 of this title (relating to Appendices A through C) attempt to recognize the natural variability of aquatic community requirements and local environmental conditions.

(2) Limited, intermediate, high, and exceptional quality aquatic habitat.

(A) Limited quality aquatic habitat. Dissolved oxygen (DO) shall be maintained at not less than three (3) mg/l for freshwater aquatic habitat.

(B) Intermediate quality aquatic habitat. Dissolved oxygen (DO) shall be maintained at not less than four (4.0) mg/l for freshwater aquatic habitat and not less than three (3.0) mg/l for saltwater aquatic habitat.

(C) High quality aquatic habitat. Dissolved oxygen (DO) shall be maintained at not less than five (5.0) mg/l for freshwater aquatic habitat and not less than four (4.0) mg/l for saltwater aquatic habitat.

(D) Exceptional quality aquatic habitat. Dissolved oxygen (DO) shall be maintained at not less than six (6.0) mg/l for freshwater aquatic habitat and not less than five (5.0) mg/l for saltwater aquatic habitat.

(3) Shellfish waters.

(A) A one-thousand (1,000) foot buffer zone, measured from the shoreline at ordinary high tide, is established for all bay and gulf waters, except those contained in river or coastal basins as defined in §333.13 of this title (relating to Classification of Surface Waters). Fecal coliform content in buffer zones shall not exceed two-hundred (200) colonies per one-hundred (100) ml as a geometric mean of not less than five (5) samples collected over not more than thirty (30) days or equal or exceed four-hundred (400) colonies per one-hundred (100) ml in more than ten (10) percent of all samples taken during a thirty (30) day period.

(B) Median fecal coliform concentration in bay and gulf waters, exclusive of buffer zones, shall not exceed fourteen (14) colonies per one-hundred (100) ml, with not more than ten (10) percent of all samples exceeding forty-three (43) colonies per one-hundred (100) ml.

(C) Shellfish waters should be maintained so that heavy metal and pesticide concentrations do not cause shellfish to exceed accepted guidelines for the protection of public health.

(D) Shellfish areas open to harvesting are identified by the Texas Department of Health in "Classification of Shellfish Harvesting Areas" maps.

(4) Toxic materials.

(A) Concentrations of non-persistent toxic materials shall not exceed one-tenth (0.1) of the ninety-six (96) hour median lethal concentration (LC_{50}) for a representative indigenous aquatic organism.

(B) Concentrations of persistent toxic materials that do not bioaccumulate shall not exceed one-twentieth (0.05) of the ninety-six (96) hour median

lethal concentration (LC_{50}) for a representative indigenous aquatic organism.

(C) Concentrations of toxic materials that bioaccumulate shall not exceed one-hundredth (0.01) of the ninety-six (96) hour median lethal concentration (LC_{50}) for a representative indigenous aquatic organism.

(e) Other uses. The quality of surface waters, other than intermittent streams and classified segments with specifically designated uses and numerical criteria, will be protected so that certain minimal uses such as navigation, agricultural water supply, and industrial water supply will be maintained.

§333.20. Determination of Standards Attainment.

(a) Sampling locations.

(1) Representative samples to determine standards attainment will be collected at locations approved by the department. To ensure comparability with past sampling data, samples will be collected at established monitoring stations. Monitoring stations may be established or discontinued by the department.

(2) Field investigation samples may be collected at points not established or approved as standards attainment sampling locations at the discretion of the department.

(b) Sample collection and preservation.

(1) To ensure that representative samples are collected and to minimize alterations prior to analysis, collection and preservation of attainment determination samples will be in accordance with procedures set forth in the most recent edition of Standard Methods for the Examination of Water and Wastewater, the most recent version of the Quality Assurance Program Plan for the department, or other reliable procedures acceptable to the department.

(2) Depth collection procedures to determine standards attainment may vary depending on the water body being sampled.

(A) Non-tidal flowing streams. In flowing streams, a profile should be obtained to determine if the water column is uniformly mixed. Samples shall be collected one foot below the water surface in streams exhibiting a vertically mixed water column. A depth-integrated sample shall be used to determine attainment in unmixed streams. Where depth is less than 1.5 feet, the collection depth shall be one-third (1/3) of the water depth measured from the water surface.

(B) Impoundments. Representative samples shall be collected from the entire water column in the

absence of thermal stratification. Collection of representative samples shall be confined to the epilimnion when an impoundment is thermally stratified.

(C) Bays. A depth-integrated (vertical composite) sample shall be collected from the surface to the natural bottom. Dredged areas shall not be considered part of the natural bottom.

(D) Tidal streams. A surface to bottom profile of DO, pH, conductivity, and temperature shall be obtained in all cases. Under conditions of density stratification, a composite sample collected from the mixed surface layer shall be used to determine standards attainment.

(c) Sample analysis.

(1) Numerical values in the water quality standards shall be determined by analytical procedures recommended in the most recent edition of Standard Methods for the Examination of Water and Wastewater, the Quality Assurance Program Plan for the department, or other reliable methods acceptable to the department.

(2) Radioactivity. Measurements will be made on filtered samples to determine radioactivity associated with dissolved minerals in non-tidal waters.

(3) Toxicity. Bioassay techniques will be selected as testing situations dictate but will generally be conducted using representative sensitive organisms indigenous or native to the receiving waters being tested and water quality conditions which approximate those of the receiving waters. Consideration will be given to using USEPA bioassay procedures.

(4) Bacteria. Bacteriological levels shall be determined by either multiple-tube fermentation or membrane filter techniques.

(d) Interpretation of results.

(1) Chemical parameters. Standards attainment determinations shall be based on at least four measurements per segment and made by averaging results from all monitoring stations within the segment to allow for reasonable parametric gradients. TDS determinations may be based on conductivity observations.

(2) Radioactivity. The impact of radioactive discharges on the surface waters of Texas will be evaluated utilizing information developed by the Sanitary Engineering Research Laboratory at the University of Texas and presented in the June 30, 1960, report entitled, Report on Radioactivity - Levels in Surface Waters - 1958-1960.

§333.21. Appendices A through C. The following appendices are integral components of the Texas Surface Water Quality Standards

005402

005402

(Appendix A - Segment Standards, Appendix B - Low-Flow Criteria, Appendix C - Segment Descriptions).

Appendix A.

Segment Standards (Uses and Criteria). The following tables identify the state's classified segments by number and a short title description. Each river and coastal basin is described in a separate table. Water uses and supporting numerical criteria are also listed by individual segment. Applicable low-flow values and complete segment boundary descriptions are provided in Appendices B and C, respectively, of §333.21 of this title (relating to Appendices A through C).

005403

TEXAS AIR CONTROL BOARD

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December 21, 1987

Mr. David H. Sorrells
Superfund Section
TEXAS WATER COMMISSION
Post Office Box 13087
Capitol Station
Austin, Texas 78711

005404

Re: ARARs
North Cavalcade Superfund Site
Houston, Harris County

Dear Mr. Sorrells:

This is in response to the interagency meeting on October 19, 1987 concerning the North Cavalcade Superfund site. You asked each agency to provide Applicable or Relevant and Appropriate Regulations (ARARs) that exceed federal requirements for the remedial alternatives.

Enclosed is a summary of the ARARs we believe apply to this site. If you have any questions, please contact Mr. James Randall of the Permits Division.

Sincerely,

Lawrence E. Pewitt, P.E.
Director, Permits Division

Enclosure

cc: Mr. Herbert W. Williams, Jr., Regional Director, Houston
Mr. Allison R. Peirce, Director, Harris County Pollution Control Department, Pasadena
Mr. Dallas Evans, Chief, Bureau of Air Quality Control, Department of Health and Human Services, Houston

177

Applicable and Relevant and Appropriate Requirements (ARARs)

I. Applicable Regulations (for all remedial alternatives):

31 TAC 101.4 - Prohibits emissions of air contaminants which may tend to be injurious to or to adversely affect human health or welfare, animal life, vegetation or property, or as to interfere with the normal use and enjoyment of animal life, vegetation or property. [Because this rule can be subject to varying interpretations, relevant and appropriate regulations which implement this rule are discussed in Section II.]

31 TAC 111.21 - Opacity must not exceed 20% averaged over a five minute period.

31 TAC 111.26 - Opacity from stationary flues must not exceed 15% if the gas flow rate is greater than 100,000 acfm. Requires installation of optical instrument unless excessive moisture precludes measurement. 005405

31 TAC 111.44 - Roads must be asphalted, watered or oiled if annual truck traffic averages > 100 per day. Roads must be asphalted, watered or oiled if monthly truck traffic averages > 200 per day.

31 TAC 111.51 - Allowable particulate emissions limited to

$$E = 0.048 * q^{0.62}$$

where E = allowable emission rate in lb/hr
and q = stack effluent flow rate in acfm

31 TAC 111.52 - Net ground level concentrations of particulate emissions from property limited to:

100 micrograms/cubic meter (5-hour average)
200 micrograms/cubic meter (3-hour average)
400 micrograms/cubic meter (1-hour average)

31 TAC 111.53 - Particulate emissions from steam generators limited to:

0.3 lb/MMBTU (solid fossil fuel fired)
0.3 lb/MMBTU if heat input <= 2500 MMBtu/hr (oil or gas fired)
0.1 lb/MMBTU if heat input > 2500 MMBtu/hr (oil or gas fired)

31 TAC 112.5 - Sulfur dioxide emissions from solid fossil fuel fired steam generators limited to 3 lb/MMBtu

31 TAC 112.6 - Maximum 440 ppm SO2 in the stack for liquid fuel-fired steam generators.

31 TAC 112.7 - Net ground level concentration of SO2 from a property shall not exceed 0.28 ppm averaged over any 30-minute period in Harris County.

Applicable regulations continued

31 TAC 112.32 - Net ground level concentration of H2S from a property shall not exceed 0.12 ppm averaged over any 30-minute period.

31 TAC 112.41 - Net ground level concentration of sulfuric acid from a property shall not exceed the following values:

15 micrograms/cubic meter (24 hour average)
50 micrograms/cubic meter (1 hour in each 24 hour period)
100 micrograms/cubic meter (maximum at anytime)

31 TAC 113.3 (Control of Inorganic Fluorides and Beryllium)

(a) Maximum atmospheric levels of gaseous inorganic fluorides calculated as hydrogen fluoride are as follows:

(i) 4.5 ppb - 12 hours
(ii) 3.5 ppb - 24 hours
(iii) 2.0 ppb - 7 days
(iv) 1.0 ppb - 30 days

(b) Maximum forage levels of fluorine

(i) avg 40 ppm (1 sample per month for 12 months)
(ii) avg 60 ppm (1 sample per month for 6 months)
(iii) avg 80 ppm (1 sample per month for 2 months)

(c) Net ground level concentration of beryllium from a property shall not exceed 0.01 microgram/cubic meter (24 hour average)

31 TAC 115.101 (Storage of Volatile Organic Compounds) -Storage of volatile organic compounds having a true vapor pressure greater than 1.5 psia and stored in tanks having a capacity > 1000 gallons must meet minimum control requirements specified in Regulation V. Contact TACB for information in the event this rule applies.

31 TAC 115.141 (Oil/Water Separators) water separators which separate 200 gallons or more per day of volatile organic compounds having a true vapor pressure greater than or equal to 1.5 psia must apply one of the following control measures:

a. Sealed vessel (vapor tight), or
b. Floating roof, or
c. Vapor recovery system

31 TAC 115.152 (Vacuum producing systems) - No controls required if maximum emissions are 100 lb per 24 hours; otherwise incinerate or use equivalent method.

31 TAC 115.162 (General Vent Gas Streams) - Must be burned at 1300 degrees F in a smokeless flare or direct flame incinerator.

005406

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II. Relevant and appropriate Air criteria:

The TACB has developed screening levels to evaluate the ground-level impacts of a number of air contaminants. The air contaminants are evaluated on short-term (30-minutes) and long-term (annual) bases. The purpose for developing these screening levels was to provide a basis for evaluating compliance with TACB rule 101.4, which prohibits nuisance conditions. Our current list of screening levels is attached. All facilities should operate in such a manner that the off-property impacts of the specified air contaminants do not exceed the listed values, as demonstrated through dispersion modeling or ambient air monitoring. The TACB Modeling Section should be consulted as to the appropriate dispersion models to be used for these purposes.

Incinerators - Particulate emissions limited to a maximum of 0.08 grains per dry standard cubic foot (corrected to 7% oxygen) which includes the front and back halves of the EPA Method 5 sampling train. Hydrogen chloride emissions must not exceed 4 lb/hr or must not exceed 1% of the HCL in the stack gas prior to entering pollution control equipment. Burning of hazardous volatile organic compounds (VOCs) must achieve a destruction and removal efficiency of 99.99 %. Other VOC burning must achieve 99.9 % destruction.

There are currently six incinerators for which the TACB has recommended these performance standards:

Rollins Environmental Services (Deer Park)
Houston Chemical Services (LaPorte)
Chemical Waste Management (Port Arthur)
Gulf Coast Waste Disposal Authority (Texas City)
Dow Chemical (Freeport)
Dupont (Orange)

Air or steam stripping of contaminated ground water or soil: Petroleum hydrocarbon emissions shall not exceed five (5) pounds per hour. Other compounds may be stripped from water or soil provided that the stripping vent stream is burned in an incinerator, boiler, or heater operated at 20% excess air and 0.5 second residence time at 1400 degrees F.

Storage tanks: If the vapor pressure of the contents >=0.5 psia, tanks >=30,000 gallons should have an internal floating roof, or external floating roof with double seals, or the vapor losses should be routed to a control device such as an incinerator or carbon adsorption system.

Process vents: Vent gases shall be burned in an incinerator, boiler, or heater operated with a minimum 20% excess air, minimum 0.5 second residence time and minimum 1400 degrees F.

Fugitive emissions: Fugitive monitoring as specified in TACB Regulation V or EPA's New Source Performance Standards (40 CFR 60) or EPA's National Emission Standards for Hazardous Air Pollutants (40 CFR 61)

005407

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Relevant and appropriate [illegible]

Compressors: Internal combustion engines or compressors that do not meet the requirements of THIS Standard E edition No. 6, must meet a NOx emission limit of 5 grams/horsepower-hour for engines greater than 500 hp.

Flares: The heat content of the mixed waste gases and any fuel gas prior to combustion shall not be less than 200 BTU/scf.

005408